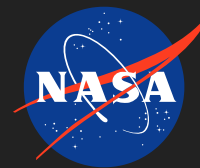


Pulsed Lorentz Accelerator

Completed Technology Project (2015 - 2016)



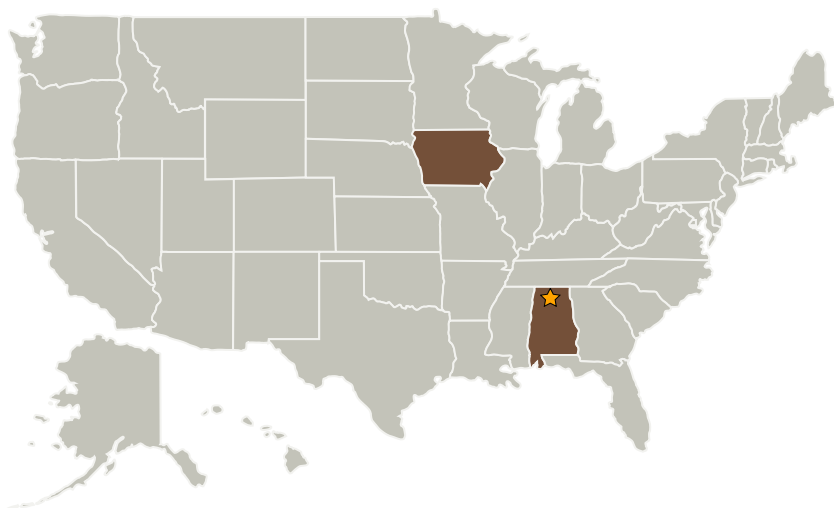
Project Introduction

The Pulsed Lorentz Accelerator (PLA) is proposed to fill the propulsion gap for 6U and smaller satellites. The primary objective is to demonstrate the basic principles of operation for the newly defined PLA electromagnetic thruster concept. This will be accomplished through a combination of analysis, 1D numerical modeling, and the experimental demonstration of a scaled device on a thrust stand in an MSFC vacuum chamber. Analytic models will also be used to estimate the performance at higher power levels. As power levels increase to 100-kW and beyond, the options for in-space electric propulsion again begin to diminish and the PLA may display distinct advantages over other high power, low TRL propulsion concepts such as PIT, MPD and VASIMR.

Anticipated Benefits

Develop an electrodeless electromagnetically accelerated plasma thruster for small spacecraft propulsion, scalable to very high power operation for future deep space robotic and cargo missions in support of human exploration.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama



Pulsed Lorentz Accelerator

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Center Innovation Fund: MSFC CIF

Pulsed Lorentz Accelerator

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Primary U.S. Work Locations

Alabama

Iowa

Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

Project Management

Program Director:

Michael R Lapointe

Program Manager:

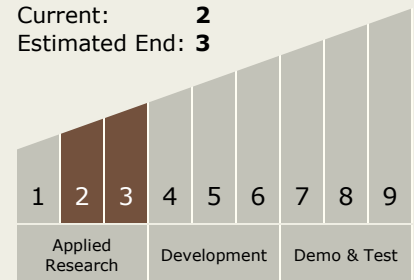
John W Dankanich

Principal Investigator:

Michael R Lapointe

Technology Maturity (TRL)

Start: 2
Current: 2
Estimated End: 3



Technology Areas

Primary:

- TX01 Propulsion Systems
 - TX01.2 Electric Space Propulsion
 - TX01.2.2 Electrostatic